

Problems of lithiated anode in lithium air batteries

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Lithium oxygen battery is attractive battery system which can make high energy density for next generation. However, even if the many researches have been progressed for years, the works about substitution of Li metal which has inherent limitation of stability and long term cycling property was terribly deficient.

Here in, our group clearly demonstrate the ambiguously unsolved problem of lithium oxygen full cell system using alternative anode (lithiated Si-CNT composite) for lithium metal by XRD and SEM analysis. The amount of lithium source in alternative anode is limited compared to quasi infinite amount of Li source in Li metal. The returning lithium ion at the charge forms the lithium hydroxide which passivates the anode by side reaction with moisture in electrolyte and from outside. Side reactions, leading to the formation of LIOH at the anode site caused loss of the Li source, resulting in decreased potential and poor cycle of the Li-O₂ full-cell system.

Although the Li-O₂ full-cell without lithium metal could be a good area for practical Li-